GANTRY CRANE DOUBLE GIRDER DESIGN WITH 80 TONES OF MAIN HOIST CAPACITY

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ABSTRACT

The shipyard requires Gantry Crane to assist production process, especially in erection process. This Gantry Crane has two hoists with 80 tones and 20 tones of capacity, 42 m of span, and 10 m of overhung in specification.

Construction calculation is one topic that we learn here. This calculation is done manually, and then the result will be benchmarked by the result generated by Patran software.

Manual calculation of the Gantry Crane generates:

- Profile of Girder: length girder = 55000 mm; face size = 800 x 12 mm; web right size = 2400 x 12 mm; web left size = 2400 x 10 mm; diaphragm size = 700 x 1200 mm; profile of stiffener = 50 x 50 x 5 mm.
- Profile of Fixed Leg : length fixed leg = 47000 mm; face size = 500 x 12 mm; web right size = 1500 x 12 mm; web left size = 1500 x 10 mm; diaphragm size = 400 x 750 mm; profile of stiffener = 50 x 50 x 5 mm.
- Profile of Flexible Leg : length flexible leg = 47000 mm; face size = 500 x 12 mm; web right size = 500 x 12 mm; web left size = 500 x 10 mm; diaphragm size = 400 x 250 mm; profile of stiffener = 50 x 50 x 5 mm.
- Weight Construction: weight of girder = 23786 kg; weight of leg = 8563 kg; weight of end carriage = 2594 kg.
- The Gantry Crane’s centre of gravity with fiducially point of flexible leg is 11316 mm unidirectional of x axis and 36004 mm unidirectional of y axis.

Keyword: Gantry Crane, weight of construction, Patran, centre of gravity, profile of gantry crane.